WRANGELL-ST. ELIAS NATIONAL PARK AND PRESERVE

CENTRAL ALASKA NETWORK

Vegetation Monitoring Program

Summary Trip Report: Boyden Hills Mini-grid

15 July – 21 July, 2009

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PURPOSE:

The purpose of this trip was to finish establishing and measuring the permanent vegetation sampling plots at the Boyden Hills mini-grid according to the Central Alaska Network (CAKN) vegetation monitoring protocols (see Roland *et al*. 2005). The 2007 botany crew sampled 14 points in the Boyden Hills mini-grid and we sampled the remaining 11 (one of which was only a grid point due to cliffs).

We were originally supposed to sample the Big Bend mini-grid south of the Chitina River, but because a fire started in the park (actually in our 4th scheduled mini-grid), the helicopter was not available to take us to this mini-grid. Instead of sampling Big Bend, we went back to complete the Boyden Hills mini-grid.

PERSONNEL:

Fleur Nicklen - crew leader, vascular composition, plot/quadrat variable estimates, transects
Dave Kofranek - non-vascular collections/id, soils data
Brandon Gottung – plot photos, tree and sapling data, tree cores, transect data

ACCESS TO MINI-GRID AND CAMPING POSSIBILITIES:

Boyden Creek crosses the Nabesna Rd at mile 34.3. It takes about an hour to drive from Slana to this creek crossing. Once to the creek the easiest way to gain access to the mini-grid is by hiking. The mini-grid is too close to the road to warrant taking an ATV. It would be best to have 1 or 2 people assist with hiking gear and food into the camping spots, but it is possible to shuttle the gear into the camping area with just 3 people.

When the creek is low, the best camping for sampling this mini-grid is about 1.5 km up the creek from the road near points 5 and 10. If the creek is too high to safely camp or there is heavy rain in the forecast, then retreating to the forested stream benches is the next best bet. There are a few densely forested areas with an open understory of *Hylocomium splendens* on the south bank that could be good for camping. Camping southwest of point 10 and west of point 5 allows you access to water and the entire mini-grid. It should be noted that because of the large elevation gain and long hikes sampling this area can be time-consuming. It is quite feasible to sample at least 2 plots per day, with occasional 3-plot days. A highly experienced and efficient crew that does not need to do soil sampling or coring protocols should be able to sample the grid in 10 days, however. Camping farther up the creek is less desirable because the drainage becomes canyon-like in parts. There are areas along the creek where you can climb south out of the drainage (near point 6) where you could possibly camp, but this really isn't a great possibility because of the difficulty in initially getting there and getting north out of the creek.

We camped about 1 km or less up the creek from the road. Throughout our time at this camp spot our water source slowly crept farther and farther upstream. Other than our disappearing water source, this was a good spot with good visibility and some flat areas for tents (Figure 1). We had long hikes each day, but this was ok because we only had 11 points to sample.

Figure 1. Looking upstream at our camp on Boyden Creek located west of points 5 and 10.

HIKING:

The hiking within this mini-grid is steep and challenging, but rewarding (Figure 2). There is over 2,000ft of elevation change in this mini-grid, starting in the forest at 3,200ft and rising into high alpine and talus at 5,300ft. Boyden Creek cuts east-west through the mini-grid and creates a barrier that must be walked around rather than used as an access corridor. We had low water levels while we were at this mini-grid and we were actually able take the stream down from point 6 to our camp. This was an interesting walk with a few lingering snow bridges (despite the hot weather), some gorge areas, and many, many crossings. This is doable during low water, but is not practical in high water. Several other minor drainages flow south into Boyden Creek and must be either crossed or walked up and around. The drainage between plots 6, 7, 11 and 12 is one that must be walked around (Figure 3). Because we determined that point 11 is too dangerous to sample, future crews will not have to walk around this gorge (only walk past it to points 16 and 21).

Hiking at the low elevations near the creek in this mini-grid is generally through spruce and spruce-birch forests. There are thick patches of alder on some of the slopes near drainages that are difficult to get through. As you climb out of the major drainage you will hike through some boggy areas and low, thick dwarf birch. Above this is wonderfully clear alpine hiking.

Figure 2. This photo of our Garmin GPS display shows the elevation gain from 3 days of sampling at Boyden Hills.


Figure 3. Hiking around the gorge between 6, 7, 11, and 12 at the Boyden Hills mini-grid.

WEATHER AND ENVIRONMENTAL CONDITIONS:

We had excellent weather for the majority of the trip with only two mornings of cold rain and fog. Smoke of various degrees of thickness lingered for the entire 10 days. Otherwise, the weather was sunny (through distant smoke) and warm with a touch of chill in the mornings and at the high elevations. The mosquitoes and white-socks were not very bothersome here.

SAFETY CONSIDERATIONS:

There were two old caribou carcasses near our camp. One was quite old with little left but bones and fur and was about 500 meters NE of camp. The more concerning carcass was about 25 meters south of the walk between our cook area and tents (so ~ 75-100m from tents and cook

area). There was enough residual meat and marrow on the dead animal to attract ravens on our first night out there, but on subsequent evenings we heard no ravens and saw no evidence that larger animals like bears or wolves were visiting the carcass.

The hiking is challenging at this mini-grid and crews should be careful about staying hydrated and being mindful not to slip or trip when tired. It is possible to choose unsafe hiking routes within this mini-grid, so crews should use common sense about route-finding between points. We had a long hike to point 11 that involved crossing a large scree field interspersed with hard rock outcrops (Figure 3). This was probably our most dangerous hike and will not have to be repeated by future crews because point 11 is not safe to sample. Hiking to point 1 also involves some gorge crossings. We chose to cross one of the gorges (near point 2) and then follow it down and across to the other side. This became dangerous with mini slot-canyons and drop-offs (Figure 4). I recommend future crews hiking up and around these gorges.

Figure 4. View up the canyon we came down on route to point 1 of the Boyden Hills mini-grid. There are a good number of larvae and other critters in Boyden Creek, so making sure to fully boil water is a wise idea.

PHENOLOGY OBSERVATIONS:

Because the aspect and elevation at this mini-grid are quite variable, I would recommend not sampling this mini-grid first in the season. Boyden Hills is a good choice phenologically for a second or third sampling trip in the season. I think it could even successfully be sampled fourth. We sampled it third in the season and we had an excellent mix of late flowering and early fruiting vascular plants. The ericaceous species were becoming ripe (we had some tasty blueberries in the boggy areas between points 10 and 14).

GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:

I collected 89 vascular plant specimens from the Boyden Hills mini-grid and Dave collected 94 nonvascular plants (Table 1). On average there were 45 vascular and 20 nonvascular plants per plot. The areas appeared to be calcareous with scattered *Potentilla fruticosa* and *Saxifraga*

reflexa, two calciphiles. The number of the first photo taken at Boyden Hills is 100-0740 and the last is 100-0922 with several deletions between these numbers. Dave collected soil from all 10 sampled points with rocks preventing soil collection only at the south end of plot 23. There were no trees or saplings in any of the plots we sampled, nor were there any trees to core in the meta-plot.

Table 1. Collection series for the Upper Caribou mini-grid.

Collector	Identifier	Series
Nicklen	Vascular plants	EFN-09-145 to EFN-09-233
Gottung	Photos	100-0740 to 100-0922 (w/ some deletions)
Kofranek	Nonvascular collections	4740 to 4833

ACTIVITES:

Wednesday, July 15

Because of the Chakina fire burning south of the Chitina, the fire helicopter was not available to take us to the Big Bend mini-grid. Finishing the Boyden Hills mini-grid was a doable alternative that does not require flying. Because there were only 11 points to finish at Boyden Hills, we would not need all 10 days to sample it and could spend some of the remaining time finishing the Upper Caribou mini-grid that we nearly finished in June 2009. Since we would need transport at some unknown time during this trip to Upper Caribou, it was easiest for us to have a park vehicle for 10 days and transport ourselves rather than have someone else transport/help us hike to Boyden and then later take us to Upper Caribou.

On Wednesday at 8am Dave, Brandon and I began loading up the suburban with our gear and manually inputting the GPS points into the Garmin and Trimble. On our way to Slana, we stopped at the Gulkana hanger to drop off our backcountry itinerary and maps. We ate lunch in Slana and then headed off to Boyden Creek, which took about an hour. We walked about 600 meters up the stream, which was dry at the road crossing, until we came to a nice deep pool in the creek. We left our cook tent here and hiked our bear barrels farther upstream and our tents even further. It took 3 shuttles to hike all of our gear to our camp spot. We finished setting up our camp by 5:30pm. When we walked back to the cook tent for dinner, the nice deep pool of water was gone! We thought we might have mis-remembered where we set up the cook area, but indeed the water slowly disappeared upstream throughout the next several days with consistent daily fluctuation: the water level would be higher in the mornings and lower in the evening.

Weather: Overcast and cool, but no rain.

Thursday, July 16

At 8am we started up the creek towards plot 1. Less than 1 km up the creek from our camp steep canyon walls emerge. Before this point we cut south up the steep bank and began hiking up the hill, briefly through forest, then through low shrubs and into dwarf shrub tundra and rock fields to point 1. One drainage east of the point 1 drainage, we chose to drop down into the little canyon and climb up the other side rather than hike all the way up and around the drainage. We

managed to do this, but it required some climbing down small waterfalls and then skirting around larger pour-offs on eroding slopes (Figure 4). I would recommend hiking up and around even though it seems like an endless slope up. It took us 2 hours to get to point 1.

Once we finally made it to our first point of the mini-grid after all this climbing, we were disappointed to find that it falls in a thick, tall alder-willow patch adjacent to a drainage way. It took us a long time to sample this plot. It is very thick and difficult to move around and there were many species for me to collect. Although it is in an alder-willow thicket, the plot is bordered by dwarf shrub tundra and a drainage way, which provided a source for quite a few plants. I found about 58 species here and collected 20 of them (partly because it was the first plot of the mini-grid).

It was a quick 20 minute walk to plot 6, which is located on a steep vegetated bank south of Boyden Creek (Figure 5). From this point you could easily get down to the creek where there were still some snow bridges in places. This is an open low shrub/dwarf shrub plot and quicker to sample, although the diversity was still high with 59 vascular plant species. We followed the creek back to camp, which was only doable because the creek was low. Even so, there were so many stream crossing that it became tiring trying to keep our feet dry. We found a packet of tuna along the creek. (Later, near point 13 we found a spoon to eat it with.)

Weather: Sunny and warm with minimal smoke.

Friday, July 17

On Friday we sampled plots 25 and 19. We took a straight path from camp to point 25, which involved a fair amount of difficult walking through alder. The walk took 1.5 hours. It is a pretty quick plot to sample with some of the lowest diversity we found at this mini-grid (38 vascular and 15 nonvascular plants) and sections of very dense *Betula nana* and *B. occidentalis*. The plot falls on the side of a hill above a 'hanging wetland valley' (Figure 6). We walked up through these little valleys and along rocky hills to point 19 (Figure 6). Plot 19 is a mix of rock field, open low scrub and *Dryas* tundra. The hike back to camp is easier from this point and we were back to camp by 6:30pm.

Weather: It was rainy and cold with low clouds throughout the morning, but cleared and warmed up by the afternoon.

Figure 5. From point 6 looking down Boyden Creek. This is one of the creek access points.

Figure 6. View from plot 19 of the area of plot 25, which is located on the side of a hill above a high moist area.

Saturday, July 18

On Saturday, we completed points 23 and 18. At 8am we started hiking up through the forest on the north side of the creek to the open boggy/dwarf birch area until we came to the first major ridge, which we hiked up. It took 2.5 hours to hike to this point. We passed point 18 on route to 23. Point 23 is on a 36 degree slope with many loose rocks (Figure 7). We found the highest diversity of nonvascular plants at this mini-grid (31), but only an average number of vascular plants (45). After this plot we side-hilled back the way we came, crossed back over a saddle and onto the other side of the ridge where we set up plot 18. Point 18 is predominately *Dryas* tundra with some scattered rocks and has a spectacular view (cover photo).

Weather: Partly sunny all day, with no rain. Cool in the morning and quite cold and windy while we sampled point 23 (still in the morning shade).

Figure 7. Plot 23 of the Boyden Hills mini-grid.

Sunday, July 19

Sunday we sampled points 11 and 12. Although the 2007 crew did not make it to point 11 and speculated that it might be on some cliffs, we thought we would give it a try nonetheless. We followed the same route that we did the day before up the forest from the north side of the creek, and then hiked through a mix of boggy areas and dwarf birch. Instead of taking the first ridge up, we walked over the base of this and down a balsam poplar slope into a drainage. We fought alder out of the drainage and onto the middle ridge. From the middle ridge we walked up a little way and then descended again into a second drainage and found a fairly clear path up to a saddle on the third ridge into tundra (between points 13 and 12). We side-sloped up the east side of the third ridge. You have to hike quite high on this ridge to avoid the drop-offs into the gorge

between points 6, 7, 11 and 12. To get to point 11 we walked around this gorge towards point16 and then cut east when safe (Figure 3) to the fourth ridge, which we then followed south until we neared point 11. It took over 3 hours to get to point 11. It is located in *Dryas* tundra that gives way to cliffs and eroding hillside into a gorge (Figure 8). It is possible that about a quarter of this plot could be sampled, but the risk of slipping or dropping gear down the gorge is too great. We only filled out a grid point datasheet here and installed a center monument. We then ate lunch and headed back to point 12, located where the third ridge begins to flatten out. Point 12 is a mix of *Dryas* tundra and low scrub.

Figure 8. View of plot 11 of the Boyden Hills mini-grid.

Weather: Sunny, warm and faintly smoky. Not a drop of rain all day.

Monday, July 20

This day we sampled points 17 and 13. We left camp at 8am in the rain towards point 17. We took the same route as the previous 2 days. Once on the first ridge we dropped down the balsam poplar slope to the drainage and again fought our way up through the alder as we did the day before. We followed this middle ridge all the way up to point 17, which is a *Dryas* tundra plot with a good amount of *Festuca altaica* mixed in. After lunch we headed back down the ridge to plot 13, which lands on the east side of this narrow ridge. It is located on a small patch of dry slope with *Festuca altaica, Arctostaphylos uva-ursi, Solidago multiradiata, Silene repens,* and *Zygadenus elegans* growing.

Weather: 45 degrees and rainy with low mist in the morning. The rain stopped by the afternoon.

Tuesday, July 21

The only unsampled point remaining at Boyden Hills was point 8. At 8 am we headed up the creek as we did on the first day of sampling at Boyden Hills and cut south up the bank where the drainage becomes canyon-like. From there we walked up the hill and around steep areas and then dropped down to point 8. Point 8, as was the case for point 1, landed in a thicket of alder and willow. It is a whole other world in this thicket with moist rock ledges and little sunlight, such that you forget the tundra surrounding you. We found some different mosses and the vascular plants *Saxifraga nelsoniana, S. cernua,* and *Chrysosplenium tetrandum* here.

After this point we ate lunch and headed to the suburban that had been patiently waiting for us on the Nabesna Rd. We decided that it would not save us time to move our camp to Upper Caribou to complete the remaining points there. It would be more efficient to continue to camp at Boyden Creek and commute the 15 miles for the next several days. For the remainder of this day we sampled point 10 of Upper Caribou. When we returned to camp in the evening we surprised Dave at dinner with 3 IPAs and barley wine for his birthday. It was a good evening.

Weather: Warm and sunny with some distant smoke.

Wednesday and Thursday, July 22-23 (also see Upper Caribou Trip Report)

On Thursday we went back to Upper Caribou and sampled points 19 and 9. In the evening we debated whether we should spend a very long day hiking into Trail Creek to sample 1 point (plot 20). I decided that this would not be a productive use of time for two reasons: 1) the Trimble had stopped working, and 2) we did not know where we were going for our next trip and would probably need time to do some logistical work when we returned to Copper Center. Instead, we decided to sample point 1 at Upper Caribou, which mostly landed in a lake. This point would be easy to get to, and add quite a few more species to the Upper Caribou species list.

Weather: Sunny and warm on Wednesday. Partly cloudy and cooler on Thursday.

CONCLUSIONS AND FUTURE CONSIDERATIONS:

Because of the steep terrain and elevation change within this mini-grid and the steep drainages that prevent crews from camping in a more central location, it is difficult to complete this mini-grid in one sampling trip.

REFERENCES CITED

Roland, C.A., Oakley, K., Debevec, E. & Loomis, P. (2005) Monitoring vegetation structure and composition at multiple spatial scales in the Central Alaska Network. National Park Service, Central Alaska Network, Final Monitoring Protocol.